Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's	)	WT Docket No. 06-49
Part 90 Rules in the 904-909.75 and	)	
919.75-928 MHz Bands	)	

REPLY COMMENTS OF THE PART 15 COALITION

The Part 15 Coalition ("Coalition") hereby submits reply comments on the above referenced Notice of Proposed Rulemaking ("NPRM").[1] As made clear by the many parties submitting comments, the public would be at risk if Progeny were to achieve its goals for the 902-928 MHz band as stated thus far. Thus, the Coalition urges the Federal Communications Commission ("FCC" or "Commission") not to take any action that would jeopardize the reliability of Part 15 devices on the spectrum.

BACKGROUND

The NPRM sets out several proposals to modify the rules applicable to the Multilateration Location and Monitoring Service ("M-LMS"), which operates at 904-909.75 and 919.75-928 MHz.[2] The Commission sought comment on whether to relax the service rules for M-LMS licensees to allow them to offer services unrelated to location-finding and to allow interconnection to the public switched telephone network ("PSTN").[3] Additionally, the Commission requested comment on reducing the M-LMS power limit from 49.2 watts EIRP and

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[1] *In the Matter of Amendment of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands*, Notice of Proposed Rulemaking, WT Docket No. 06-49, FCC No. 06-24 (rel. March 7, 2006) ("NPRM").

[2] The term "M-LMS" here also includes any successor services in the bands presently assigned to the M-LMS.

[3] NPRM at ¶ ¶ 20-25.

requiring M-LMS licensees to use spread spectrum or broadband digital emissions.[4] The NPRM also tentatively concluded that the Commission retain the safe harbor rule that prevents M-LMS licensees from objecting to interference from certain Part 15 operations, but that it eliminate the requirement that M-LMS licensees field test their equipment for interference to Part 15 devices.[5]

The Part 15 Coalition, consisting of entities that manufacture, use and/or represent users of unlicensed Part 15 devices that operate on 902-928 MHz, filed comments stressing four key points:

- Part 15 devices and services operating in the unlicensed 900 MHz spectrum are relied upon daily by consumers and commercial and industrial users, and make an important contribution to our nation's public safety, health and welfare as well as its economic well being.

- Without the protection of the safe harbor rule, Part 15 potentially would be subject to disruptions in operations upon claims of interference, which would discourage continued intensive investment and use of the band by unlicensed devices.[6]

- The current Part 90 rules strike the appropriate balance between M-LMS and Part 15 operations.[7] While Part 15 devices must accept interference from, and may not cause interference to, M-LMS devices, the Commission provided that M-LMS devices must undergo interference testing and that certain Part 15 devices would be protected by the safe harbor rules.[8] This balance should not be disturbed.

- Appropriate technical rules for the band should depend upon the specific applications authorized in M-LMS frequencies. Without better information about the specifics of Progeny's intended operations, it is impossible to determine what power limits and other technical rules should be applied to M-LMS operations.

Most of the parties filing comments in this proceeding support the Coalition's position.

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[4] *Id.* at ¶ ¶ 28 and 30.

[5] *Id.* at ¶ ¶ 36 and 40.

[6] *Id.* at 5.

[7] Coalition Comments at 7.

[8] *Id.* at 7-8.

DISCUSSION

I. The Commission Must Proceed Cautiously in Considering Any Changes to the M-LMS Service Rules.

a. The Comments Are Almost Unanimous in Opposing the Relaxation of the M-LMS Service Rules.

Nearly all of the parties state that the M-LMS service rules should not be relaxed. For example, the Consumer Electronics Association opposed expanding the permissible scope of M-LMS operations, noting that the Commission's guiding principle in this proceeding should be "First, do no harm."[9] Motorola, which manufactures wireless broadband radios and land mobile radios that operate on the band, opposed expanded use of the M-LMS band because doing so would "undermine the continued viability of Part 15 operations in the band" and "result in a significant increase in interference to existing users and systems."[10] The Telecommunications Industry Association, whose member companies design, produce and deploy equipment used in the band, believes the proposed rule changes would result in harmful interference to Part 15 use of the spectrum, which, it noted, is particularly vulnerable to interference.[11] In addition, a number of wireless Internet service providers ("WISPs"), equipment makers and associations generally opposed the rule changes as being harmful to WISP operations.[12]

Of note, even the M-LMS licensees disagree about whether the M-LMS rules should be changed. Telesaurus opposed any reduction in power limits or duty cycle for M-LMS operations, and stated that it is making "excellent progress" towards developing its M-LMS system but that it (and other M-LMS operators) cannot succeed if the Commission proceeds with

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[9] Comments of the Consumer Electronics Association at 2.

[10] Comments of Motorola, Inc. at 8.

[11] Comments of the Telecommunications Industry Association at 5 and 7.

[12] *See* Comments of Champaign-Urbana Community Wireless Network, Comments of Mike Oh, Comments of Mt. Vernon Net, Inc., Comments of Wave Wireless and Comments of WISPA.

the proposed rule changes.[13] Teletrac, one of only two M-LMS licensees providing service to the public at this time, called the proposal set out in the NPRM a "new, untested, and speculative operating paradigm that may never become either economically competitive or technologically feasible."[14] Telesaurus requested that the Commission terminate the proceeding without making any rule changes, while Teletrac opposed the application of new rules to current licensees.

b. Petitioner Still Has Not Stated What Services It Seeks to Offer.

A common theme among the commentors is that Progeny still has not provided sufficient information regarding its intended use of the spectrum to allow for a useful analysis of the effects of a service rule change on other operations. As the Coalition noted in its initial comments, it is difficult to judge the ramifications of the proposed rule changes because Progeny has not provided sufficient information regarding what services it may offer under its proposed new regulatory scheme.[15]

Itron noted that Progeny, after filing a petition for rulemaking more than four years ago, still has not offered a proposal for its intended new services from which an interference evaluation can be made.[16] Motorola explained that "[t]echnical studies to assess accurately the actual impact are difficult to perform without a clear understanding of all of the technical parameters" of Progeny's proposal.[17] And the New American Foundation concluded:

> Progeny's petition is most striking not for what it says but for what it doesn't say. . . . we are told countless times of the consumer benefits of what Progeny is proposing, but nowhere is there an explicit acknowledgment that this would come at an incalculable cost to potentially tens of millions of unlicensed users.

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[13] *See, e.g.* Amended Comments of Telesaurus Holdings GB LLC at 5, 8 and 13. Telesaurus holds a majority of the "A" Block M-LMS licenses. *Id.* at 1.

[14] Comments of Teletrac, Inc. at 4.

[15] Coalition Comments at 10.

[16] Comments of Itron, Inc. at 6-7.

[17] Comments of Motorola, Inc. at 6.

> Nor does Progeny . . . state that its proposed new services will neither cause interference to nor be severely impacted by interference from high power military radars.[18]

Neither has Progeny provided any information regarding the timeline of developing its technology and getting its system to market, who its potential customers might be, or how it intends to obtain these customers.

c. The Part 15 Coalition Does Not Oppose More Flexible M-LMS Service Rules If The Accompanying Technical Rules Permit Continued Part 15 Reliability.

The Coalition's primary concern is that Part 15 operations in the band continue unimpaired by M-LMS operations. Part 15 operations cannot operate reliably with any less interference protection than the current rules provide. The Coalition would not oppose changes to the M-LMS service rules that, at the same time, ensure that interference protection to Part 15 devices remains unchanged.

II. Progeny Is Unpersuasive in Arguing That It Will Not Interfere with Part 15 Devices.

Progeny tries to make the case that a system of 49-watt EIRP LMS transmitters will interfere less with Part 15 than other Part 15 devices operating at under one-tenth the power.[19] The argument does not stand up.

Progeny analyzes interference into very limited categories of Part 15 devices: wireless local area networks, the Ricochet system, automatic meter readers, and cordless telephones.

None of these categories helps Progeny. The vast majority of wireless local area networks, including all Wi-Fi systems, operate in other bands.[20] Ricochet has closed most of its

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[18] Comments of the New American Foundation, *et al*. at 6.

[19] Progeny at 24 and Appendix A. Progeny uses the figure 30 Watts ERP. The EIRP equivalent is 2.15 dB higher, at 49 Watts.

business. Progeny has its facts wrong about automatic meter readers.[21] The cordless phone example (and some others) improbably posit a rooftop Part 15 device operating at the maximum of 4 watts, just 500 feet away, while spacing LMS base stations at fewer than one per ten square miles.[22] Progeny, moreover, completely neglects other large and important categories of Part 15 equipment, including RFID, industrial controls, mission-critical utility Supervisory Control and Data Acquisition ("SCADA") systems, and consumer audio gear.

Even then, Progeny's conclusions depend on carefully manufactured scenarios based on unlikely assumptions, ignoring that most Part 15 devices operate at a tiny fraction of the 4-watt EIRP maximum, typically just a few hundredths of a watt and within a few meters of the ground. The interference radius thus tends to be short, especially in cluttered environments. M-LMS, in contrast, seeks to operate transmitters a thousand times more powerful, elevated on towers and high buildings.[23] The expansion of permissible services that Progeny seeks is likely to result in transmitter densities far in excess of the one per ten square miles it assumes.

Progeny states: "At first blush, it might appear that LMS systems will present a greater interference threat than other Part 15 devices . . .."[24] We agree. Progeny's analysis does nothing to upset this inference.

Separately, Progeny argues that reducing M-LMS power from 49 to 10 watts EIRP will not reduce interference to Part 15 because, says Progeny, M-LMS providers will have to install

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[20] The Wi-Fi protocols specify either the 2.4 or 5.7 GHz unlicensed bands. None operates at 902-928 MHz.

[21] *See In the Matter of Progeny LMS, LLC, Petition for Rulemaking to Amend Part 90 of the Commission's Rules Governing the Location and Monitoring Service*, Comments of Itron, Inc. on Progeny White Paper at 2, RM-10403 (filed Jan. 10, 2003).

[22] Progeny Appendix A at 21, 22-23.

[23] Progeny's analysis assumes its antennas are 150 or 200 feet high. Progeny Comments Appendix A at 18, 20, 22.

[24] Progeny Comments Appendix A at 15.

more transmitters.[25] But there is a basic flaw in the analysis. Progeny calculates the interference radii for 49-and 10-watt transmitters by assuming a fixed interference threshold and showing that the total area within the contours is approximately the same for one 49-watt transmitter and for the five 10-watt transmitters needed to cover the same region.[26] This approach, however, assumes that a Part 15 receiver is indifferent to the magnitude of incoming interference. That is simply not true. The interfering signals from five separate 10-watt transmitters can never reach the intensity seen in the vicinity of a single 49-watt transmitter. Interference is not a yes/no phenomenon. A Part 15 device can operate successfully in the presence of low levels of interference – albeit perhaps at lower reliability or data rate – where higher interference levels might drown it out completely.

Notwithstanding Progeny's efforts to show otherwise, the obvious remains true: high transmitter powers are more interfering than low transmitter powers.

III. Technical Rules.

Rational technical rules must depend on the services authorized – on the needed range, data rate, building penetration, reliability, etc. Likewise, the potential for interference into Part 15 depends on such factors as the M-LMS deployment density (units per square kilometer), duty cycle (average percentage of "on" time), typical height off the ground (for attenuation), and power spectral density – all of which again depend on the application.

As noted above, the Coalition is not opposed to providing M-LMS licensees with more service and operational flexibility, as long as interference protection to Part 15 devices is unchanged from the present rules. Progeny has not helped either the Coalition or the Commission to determine a workable technical standard that would achieve this goal.

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[25] Progeny Comments at 29 and Appendix B.

[26] Progeny Comments, Appendix B at 2-4.

Progeny's original petition in 2002 was vague on the authority it sought, asking for "flexibility to offer whatever services the market can support and demand," subject only to non-interference with the primary users.[27] Progeny's recent comments have done little to narrow the uncertainty. Although Progeny mentions its planned Enhanced Position Location system, and a proposed "overlay network" to facilitate sharing among licensed and unlicensed operations,[28] it does not provide enough detail on either to help the Commission formulate suitable rules.

The Coalition requests that the Commission hold this proceeding in abeyance until Progeny comes forward with a more specific service proposal. The Commission then can issue a supplemental public notice inviting comment on appropriate changes to the M-LMS service and technical rules. This proceeding is, after all, taking place at Progeny's request, so it is entirely reasonable that Progeny be asked to meet its burden of going forward and to tolerate any delays from its failure to do so.

a. The Safe Harbor Rule.

Progeny claims that eliminating the safe harbor rule for future Part 15 devices would encourage spectrum efficiency and provide an incentive for Part 15 manufacturers to develop non-interfering technologies. Neither argument stands up to examination.

To assert, as Progeny does, that the safe harbor rule improperly "preserv[es] incentives for maintaining outdated, inefficient usage,"[29] is both a *non sequitur* and factually incorrect. It is a *non sequitur* because Part 15's interference potential is unrelated to its spectrum efficiency. The assertion is factually incorrect because Part 15's use of the 902-928 MHz band, measured in bits/Hertz/acre, may be the most efficient in the entire RF spectrum.

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[27] Progeny Petition at 1.
[28] Progeny Comments at 10-12.
[29] Progeny Comments at 35.

The notion that the safe harbor rule deters Part 15 manufacturers from employing interference-reducing technologies may be on better logical ground,[30] but again is factually incorrect. Even with the safe harbor rule in place, Part 15 manufacturers strive for minimum transmit power and low duty cycles to extend battery life and optimize frequency re-use – properties that also reduce interference potential. Spread spectrum techniques give Part 15 high data rates and resistance to interference, and again, reduce interference into other systems. In general, Part 15 equipment that works well is also minimally interfering – with or without the safe harbor rule.

b. Interference Testing.

Progeny raises two arguments to oppose continuation of the requirement that M-LMS test for non-interference into Part 15. First, Progeny claims the requirement is unnecessary, inasmuch as M-LMS will not interfere with Part 15.[31] As shown above, Progeny has failed to make this case. Second, Progeny asserts the requirement is unworkable because Part 15 has no incentive to collaborate with M-LMS on test standards.[32] By way of supposed proof, Progeny adds: "In ten years, however, that collaboration has yet to occur, let alone produce any testing standards."[33] For ten years, however, Progeny has asserted that there is not an adequate supply of M-LMS equipment for licensees. If so (although Teletrac and Telesaurus have their doubts), there is also insufficient equipment around which to construct a test.

Progeny also argues that the testing requirement turns the regulatory hierarchy on its head.[34] What Progeny mistakes for an upside-down hierarchy is actually a fine balancing of the

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[30] Progeny Comments at 36.
[31] Progeny Comments at 41-42.
[32] Progeny Comments at 42-43.
[33] Progeny Comments at 42.
[34] Progeny Comments at 43.

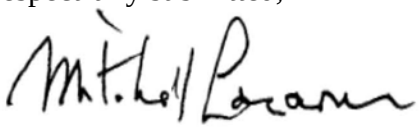
needs of the Part 15 community with the needs of M-LMS licensees. The Commission made a policy decision in 1995 that Part 15 operation was in the public interest and worth protecting. Events since that time have borne out the Commission's actions. Indeed, the case for protecting Part 15 is far stronger now than it was in 1995.

CONCLUSION

Part 15 in the 902-928 MHz band is one of the Commission's great successes. Hundreds of millions of devices serve consumers and commercial users reliably and inexpensively. M-LMS to date has failed. There may be a variety of reasons, but none is related to Part 15 usage.

Progeny now asks the Commission to expand the services it can provide. The Part 15 Coalition does not object. But Progeny also asks the Commission to eliminate long-standing rules that enable Part 15 to function well. There, we do object. Through steady growth, continuing innovation, and efficient use of limited spectrum, Part 15 has earned the right to be free of new encumbrances, especially those motivated not by public need, but merely by M-LMS's wish to recoup a bad investment.

Respectfully submitted,



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ATTACHMENT A

PART 15 COALITION MEMBERSHIP AND STATEMENTS OF INTEREST

AMERICAN PETROLEUM INSTITUTE:

The American Petroleum Institute ("API") is a national trade association representing approximately 400 companies involved in all phases of the petroleum and natural gas industries, including the exploration, production, refining, marketing and transportation of petroleum, petroleum products and natural gas. API's members utilize wireless communication facilities to support the search for and production of oil and natural gas, to ensure the safe pipeline transmission of natural gas, crude oil and refined petroleum products, to process and refine these energy sources and to facilitate their ultimate delivery to industrial, commercial and residential customers. In addition to other frequencies, API member companies make extensive use of license-exempt spectrum in the 902-928 MHz band for myriad functions performed with Supervisory Control and Data Acquisition ("SCADA") systems in the production, collection and pipeline transportation of petroleum and natural gas.

SCADA systems are used to remotely operate large production fields, sometimes comprised of thousands of oil and/or natural gas wells, by collecting and transmitting to a central automation center well pressures, temperature and rates of flow that are essential to the coordinated and safe operation of a production facility. The composite information is used to make adjustments necessary to ensure the safe and efficient operation of an entire field. Some natural gas contains high levels of hydrogen sulfide and these SCADA systems are used to transmit alarms when there is a leak at a well that, if not detected, could cause loss of life. Similar SCADA systems are used in pipeline systems that gather crude oil and natural gas, to measure pipeline pressure and flow rates. They are used to open and close pipeline valves. In the event of a pipeline leak or rupture, the ability to remotely close a valve is critical to the operation and to public health. SCADA systems that utilize frequencies from this band are also used for petroleum and natural gas transmission pipeline operation, enabling operators to measure flow rate, temperature and pressure. As in gathering systems, these SCADA systems are not only used to detect leaks, but to also open and close valves. Implementation of the rule changes suggested by the Commission could have a devastating affect on the operators of these SCADA systems to adjust their operation to avoid interference.

AMERICAN WATER WORKS ASSOCIATION:

The American Water Works Association (AWWA) is an international non-profit, scientific and educational society dedicated to the improvement of drinking water quality and supply. Its 57,000-plus members include more than 4,700 utilities that supply roughly 80 percent of the nation's drinking water. Water utilities are a critical component of our nation's infrastructure and play a vital role in ensuring public safety. Water distribution systems are critical to fire fighting in order to sustain water service; the inability of water systems to sustain service would disarm the fire fighters, among other risks including risks to public health and economic harm in communities served.

AWWA's utility members are directly affected by this proposal as many of them employ these frequencies for data transmission in their supervisory control and data acquisition (SCADA) systems. There is also significant use of this spectrum for automated meter reading (AMR) applications, which are essential to effective and efficient utility billing systems. AMR systems are used extensively by water utilities. AMR facilitates improved metering and timely billing for the services provided. Consequently AMR is a valued tool as utilities work to provide an essential public service at fair rates that support long-term infrastructure investment and maintenance as well as day-to-day operations. As with SCADA applications, there are not adequate spectra set aside for this type of internal water utility communication system and as a consequence utilities are reliant on the bands that are the subject of the FCC proposed rulemaking.

ASSOCIATION OF AMERICAN RAILROADS:

The Association of American Railroads ("AAR") is a voluntary non-profit membership organization whose Class I freight railroad members generate over 90% of the total operating revenues of all freight railroads in the U.S. AAR's other members include Amtrak, the nation's principal intercity passenger railroad, and numerous regional and short line railroads. AAR serves as the FCC-certified frequency advisory committee performing frequency coordination in the Private Land Mobile Radio (PLMR) bands for frequencies designated in Section 90.35 of the Commission's rules for exclusive frequency coordination by the railroad industry. The railroad industry relies very heavily on wireless communications – both licensed and unlicensed – for the day-to-day operation of the nation's rail network.

Unlicensed communications devices, including those that operate in the multilateration LMS bands that are the subject of this proceeding, play an increasingly important and integral role in the railroad business. Most of these unlicensed devices are used in rail yards, depots, terminals and hub centers to enhance productivity and efficiency in a variety of processes and applications. For example, unlicensed devices are used for the wireless downloading of onboard event-recorder logs on locomotives. In addition, unlicensed systems are extremely important for the tracking and management of intermodal traffic (ship cargo containers or truck trailers that are transported by railroad flatbed car), which is an increasingly large component of overall freight rail traffic. Other examples include systems deployed in railroad mechanical shops that enable workers to report their time on wireless kiosks located throughout the shop area, and to check out tools using wireless scanners located at tool checkout counters. There are many other types of unlicensed wireless LAN applications in use throughout the railroad industry to support back-office and other business operations, not to mention many cordless telephones and cordless headsets used in office areas. In total, there are thousands upon thousands of unlicensed devices deployed throughout the rail industry that have enabled America's railroads to operate more efficiently and productively. AAR is pleased to join the other parties to these Comments in urging the Commission to take no action that would jeopardize the effectiveness of these devices.

BOSTON SCIENTIFIC, INC.:

Boston Scientific is a leading worldwide manufacturer of medical devices for cardiac patients. It has been manufacturing implantable devices with telemetry features since the 1970's. Boston Scientific's heart devices include implantable pacemakers, cardioverter defibrillators (ICDs) and cardiac resynchronization therapy (CRT) devices.

Recently, Boston Scientific has begun marketing cardiac implant devices that use the 902-928 MHz band as their primary means of communicating telemetry information.

CELLNET TECHNOLOGY, INC.:

Cellnet is the leading provider of real-time automated meter reading ("AMR"), distribution automation ("DA"), and supervisory control and data acquisition ("SCADA") solutions to the utility industry. Based in Atlanta, Georgia, Cellnet supplies gas, water, and electric utilities with highly reliable, field-proven products that enable them to communicate with many types of remote devices using wireless and IP network communications. Using a combination of Part 101 Multiple Address System ("MAS") licenses and spread spectrum Part 15 devices operating in the 902-928 MHz band, Cellnet has created a low-cost telemetry services network used for the remote monitoring and control of devices, primarily utility meters.

DATAMATIC, LTD.:

Datamatic, Ltd. is a closely held, private firm located at 3600 K Avenue, Plano, Texas 75074 and has been providing innovative meter reading systems, products and services to the electric, gas and water utilities primarily located in the United States for over 25 years.

To date, Datamatic has shipped over one million Part 15 AMR modules to utilities. Our investment in Part 15 technology over the past seven years is significant. We have four issued patents and numerous patent applications pending for our Part 15 technology. We depend on this part of the spectrum, as do most of our competitors, because it offers the most cost efficient way to obtain meter information from all three metered services. Any interference in the 902-928 MHz band from M-LMS devices will have a catastrophic impact on Datamatic's current deployed customer base and, since Datamatic does not have the financial resources some of its competitors, it would not be able to develop, market, manufacture and sell cost-effective solutions to its utility customers in the future.

ELSTER ELECTRICITY, LLC:

Elster Electricity, LLC , a global leader in innovative metering solutions, is a major provider of advanced metering infrastructure (AMI) solutions that help utility companies improve revenue cycle services, customer service, delivery reliability, and workforce utilization. With more than 100 years of electricity metering experience (formerly as Westinghouse Electric Corporation and ABB Electricity Metering), Elster Electricity is part of the world's largest multi-utility metering company combining the leaders in electricity, water, and gas metering.

The Commission's current rules and policies for the 902-928 MHz band have fostered a variety of innovating wireless metering services operating under Part 15 of the Commission's rules that now provide reliable and dependable service. Elster Electricity urges the Commission to make no changes in its current rules and policies for the multilateration LMS service that would put at risk the substantial investment that many utilities and municipalities have made in their imbedded wireless metering infrastructure or that would deny the public the benefit of this efficient and cost-saving technology.

FREESCALE SEMICONDUCTOR, INC.:

Freescale Semiconductor, Inc. (NYSE:FSL, FSL.B) is a global leader in the design and manufacture of embedded semiconductors for wireless, networking, automotive, consumer and industrial markets. The company provides original equipment manufacturers with chips to help them drive advanced cell phones, manage Internet traffic and to help make vehicles safer and more energy efficient. It has more than 10,000 customers including 100 of the top global manufacturers.

Freescale Semiconductor is a major manufacturer of products and technology that use the 902-928 MHz band, including secure, keyless-entry systems for automobiles, IEEE 802.15.4/ZigBee sensors and control products for commercial, industrial, residential and agricultural uses, automatic meter reading systems for utilities, and two-way voice over digital radio, as well as many other uses.

FREEWAVE TECHNOLOGIES, INC.:

FreeWave designs, manufactures, and markets Part 15 spread spectrum radios that operate in the 902-928 MHz band. FreeWave has shipped hundreds of thousands of 900 MHz radios over the years, representing significant financial investments by its customers. Freewave's radios are used on numerous mission critical applications, such as: monitoring volcanic and seismic activity to provide early warnings; collecting data for oil and natural gas wells; monitoring and controlling pipelines, which are a critical part of the infrastructure of this country; providing critical information on clean water systems that supply drinking water to most metropolitan cities in the U.S.; implementing smart traffic systems that control the timing of traffic lights and the flow of traffic in metropolitan areas around the country; and monitoring electric substations, which is critical to the electric power grid. FreeWave's radios also are used in numerous government and military applications.

The proposals to expand the permitted uses of LMS in the 902-928 MHz band and to eliminate the safe harbor provision of Section 90.361 threaten the continued existence of these types of unlicensed systems already deployed in the band. The protections afforded these systems by the Commission's existing rules will be essential to the continued operation and coexistence of Part 15 devices in the 902-928 MHz band for years to come.

INTELLEFLEX CORPORATION:

Intelleflex Corporation provides long range semi-passive RFID solutions for a variety of asset and product tracking applications. Intelleflex's RFID products are built on the EPC Global passive RFID standard but have extended capabilities using battery assisted communication and high sensitivity receivers to read asset tags up to 100 meters. We are participating in the efforts in both EPC Global and the International Standards Organization to standardize semi-passive RFID communication protocol. Our tags also incorporate large memory capacity and support a variety of sensors to provide timely monitoring of critical measurements.

We support both indoor and outdoor applications such as asset tracking and yard management. Outdoor applications in particular will be sensitive to high power non-spread spectrum based interference that does not comply with the Part 15.247 rules.

ITRON, INC.:

Itron manufactures automatic meter reading ("AMR") systems. These systems use fixed and mobile wireless devices to enable a utility to monitor equipment such as business or residential meters from a remote location. Traditionally, utility company employees had to travel to each device and record measurements manually. With AMR technologies, wireless sensors installed in each remote piece of equipment transmit measurements back to a mobile unit (such as a van), to the utility's central office or headquarters, or to an information processing center. The 902-928 MHz band provides a critical link in Itron's AMR systems.

Itron has provided nearly 40 million meter modules to more than 1200 electric, gas, and water utilities nationwide, and Itron's customers have invested over $2 billion in their AMR networks. Because of its extensive use of the 902-928 MHz band, Itron was an active participant in the original M-LMS proceeding and in the proceeding addressing Progeny's petition for rulemaking.

MOTOROLA:

Motorola manufactures and has sold hundreds of thousands of devices for use under Part 15 in the 902-928 MHz band. Motorola equipment operating in this band includes equipment for wireless broadband (Canopy), off-network (MOTOtalk™ / Direct Talk^{SM}) and on-site (DTR Series™ radios) communications.

Canopy provides high quality broadband service in the 902-928 MHz bands and is particularly suited to the delivery of broadband services in rural areas for education, residential broadband access and non-line of site applications. MOTOtalk™ (also call Direct Talk^{SM} in the Sprint-Nextel service brand) is a push-to-talk feature implemented in our iDEN radios which creates a temporary virtual network with other MOTOtalk™ capable units within 2 miles. This service keeps users connected if the regular network is down, the signal is weak or the users are in out-of-coverage areas. It allows them to transfer manually to a simplex two-way radio-to-radio communication mode and is also useful for private or group communications for non-mission critical government use, construction teams, utilities, outdoor sports enthusiasts or groups that travel outside of Nextel coverage. As of May 1, 2006, MOTOtalk™ is in the

following iDEN handsets approved by the FCC: i315, i325, i580, i740, and i870. DTR Series™ radios provide similar capabilities to MOTOtalk™ for on-site communications in hospitality, retail and manufacturing environments but on a stand-alone, non-integrated device.

PLEXUS RESEARCH, INC.:

Plexus Research is a prominent consulting firm that specializes in applications of utility "customer technologies" including various automatic meter reading systems. A number of these automatic meter reading systems depend on use of the 902-928 MHz spectrum, including AMR systems by firms including Itron, Cellnet, Elster Electricity, Tantalus and many others.

The firm has been involved in work to determine the potentially adverse effects of a rising noise floor on utility-deployed automatic meter reading (AMR) devices that operate in the unlicensed 902-928 MHz band, which was conducted for the Electric Power Research Institute.

SYMBOL TECHNOLOGIES, INC.:

Symbol Technologies, Inc., The Enterprise Mobility Company™, is a recognized worldwide leader in enterprise mobility, delivering products and solutions that capture, move, and manage information in real time to and from the point of business activity. Symbol enterprise mobility solutions integrate advanced data capture products, radio frequency identification technology, mobile computing platforms, wireless infrastructure, and mobility software.

Symbol's comprehensive solutions for radio frequency identification ("RFID") utilize this Part 15 spectrum as part of its corporate supply chain systems. Symbol's RFID products encompass the entire spectrum of components and services required for a successful enterprise-wide RFID deployment. Fixed and mobile readers, antennas, tags, and packaged solutions complete a scalable infrastructure platform that was designed and built to operate in this frequency spectrum. Additionally, Symbol customers include manufacturers, hospitals, and retailers that have hundreds of thousands of legacy systems that utilize this 902 -928 MHz spectrum for data management that stand to be negatively impacted by the requested rule change.

UNITED TELECOM COUNCIL:

UTC is the information technology and telecommunications association for the nation's electric, gas, and water utilities, natural gas pipeline companies and other critical infrastructure industries (CII) entities, including approximately 700 utilities and pipeline companies. All utilities and pipeline companies depend on reliable and secure communications systems to carry out their public service obligations, including various critical control systems that ensure the safe and reliable provision of electric, gas and water service to the American public. In addition, most electric, gas and water utilities have implemented, or are in the process of deploying upgraded, automated meter reading (AMR) systems.

Many such control systems and AMR networks use wireless technology generally, and the 902-928 MHz band in particular. UTC is aware of more than 60 million electric meters in service, and this is not a complete count. Beyond AMR, many electric and other utilities increasingly use this frequency band for mission-critical process control systems such as Supervisory Control and Data Acquisition (SCADA) with equipment usable on Part 15 frequencies. Utilities also use this band for other technologies, including spread-spectrum radios, again based on manufacturer decisions to develop equipment under Part 15. For example, S&C Electric's Automated Systems Division builds automatic switching equipment that use the 902-928 MHz band in a wireless meshed network to enable peer-to-peer devices to communicate with each other and provide automatic switching of the power grid. These devices are able to detect faults and through communications with their peers isolate the fault, thus minimizing the area affected. Once a fault has been repaired, the system will automatically restore. Such equipment will enable utilities automatically to react, isolate, restore and test the power grid in milliseconds. Spread-spectrum radios are in increasing use across the utility community to provide a variety of primarily data applications; additional research is likely to show the numbers of these devices in the hundreds of thousands. For these reasons, changes to the rules to accommodate M-LMS licensees must be designed to minimize harm to Part 15 users.

VOCOLLECT, INC.:

Vocollect is a privately-owned company headquartered in Pittsburgh, PA with additional offices in Chicago, Miami, London and Tokyo. The company develops wireless, speech-enabled wearable computers and peripheral devices for industrial, warehousing and healthcare applications. Vocollect is the industry leader for voice-directed business solutions. Each day, over 100,000 workers in hundreds of companies on six continents use Vocollect products to increase accuracy, boost productivity, and improve customer satisfaction. Since pioneering voice recognition for industry in 1987, Vocollect has set the standard for voice-directed business solutions that cut operating costs by eliminating errors and improving worker productivity shift after shift.

Unlicensed Part 15 devices are incorporated into Vocollect products and are considered crucial to proper product operation. Two types of devices are used or planned for use in the 902-928 MHz ISM band. First, portable RFID readers that read passive EPC tags are used in supply chain applications including transportation, warehousing and distribution. These devices use backscatter techniques to read information from unpowered tags and are especially sensitive to interference from other equipment operating in the same band. In addition, Vocollect is investigating the use of IEEE 802.15.4 ("ZigBee") devices for low-power, low bit-rate, short-range communications in certain healthcare applications. For these reasons, Vocollect joins with the coalition in opposing rule changes that would increase the potential for harmful interference from M-LMS systems.

ZEBRA TECHNOLOGIES CORP.:

Zebra Technologies delivers innovative and reliable on-demand printing solutions for business improvement and security applications in 100 countries around the world. More than 90 percent of Fortune 500 companies use Zebra®-brand printers. A broad range of applications benefit from Zebra brand thermal bar code, "smart" label and receipt printers, and plastic card

printers, resulting in enhanced security, increased productivity, improved quality, lower costs, and better customer service. The company has an installed base of over five million printers, including wireless mobile solutions and RFID printer/encoders operating under FCC Part 15 in the 902-928 MHz ISM band.

With a significant and growing installed base of RFID encoder/reader equipment in many global manufacturing and distribution operations, Zebra clearly understands that RFID requires true event driven operation. In the case of RFID, when goods pass through a portal or along a conveyor, there is only one opportunity to read the tags on those goods. Once the item has passed the reader it has gone forever. Furthermore the production process cannot be stopped to allow for delays in the RFID (radio communication) reading function cause by competition from non-cooperating readers operating under Part 90. The expansion of this band to more licensed, higher power devices would hinder the operation of existing RFID encoders/readers already in operation by increasing the 902-928 MHz spectrum noise floor. It would also create channel competition between low-powered Part 15 RFID devices and higher powered Part 90 M-LMS devices, potentially rendering portions of the 902-928 MHz band unusable by RFID readers. The result would be higher costs in manufacturing and distribution operations from the lost efficiencies due to reduced RFID reader performance.